(For Session S5)

DC AND STRUCTURED ELECTRIC FIELDS OBSERVED ON THE C/NOFS SATELLITE AND THEIR ASSOCIATION WITH LONGITUDE, PLASMA DENSITY, AND SOLAR ACTIVITY

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Observations of DC electric fields and associated **E** x **B** plasma drifts gathered by the Vector Electric Field Investigation (VEFI) on the Air Force Communication/Navigation Outage Forecasting System (C/NOFS) satellite are presented. We show statistical averages of the vector fields and resulting **E** x **B** plasma flows for the first three years of operations as a function of season, longitude, local time, and F10.7 conditions. Magnetic field data from the VEFI science magnetometer are used to compute the plasma flows. Although typically displaying eastward and outward-directed fields during the day and westward and downward-directed fields at night, the data from DC electric field detector often reveal variations from this pattern that depend on longitude, solar activity, and plasma density. Clear "wave-4" tidal effects in both electric field components have been detected and will be presented. Zonal plasma drifts show a marked variation with solar activity and may be used as a proxy for neutral winds at night. Evidence for pre-reversal enhancements in the meridional drifts that depend on solar activity is present for some longitudes, and are corroborated by clear evidence in the plasma density data that the spacecraft journeyed below the F-peak during evenings when the rise in the ionosphere is most pronounced. In addition to DC electric fields, the data reveal considerable electric field structures at large scales (~100's of km) that are usually confined to the nightside. Although such electric field structures are typically associated with plasma density depletions and structures, what is surprising is the number of cases in which large amplitude, structured DC electric fields are observed *without* a significant plasma density counterpart structure, including their appearance at times when the ambient plasma density appears relatively quiescent. We investigate the mapping of structured electric fields along magnetic field lines from distant locations and consider tropospheric thunderstorm sources to explain some of the observations. The dependence of the structuring on season and solar activity will be reported and discussed.